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EXAMINER	
BORSETTI, GREG	

ART UNIT	PAPER NUMBER
4141	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/582,962	Applicant(s) KONDO, HIROAKI	
	Examiner GREG A. BORSETTI	Art Unit 4141	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *5 and 10-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *5 and 10-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 June 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ ~~Information Disclosure Statement(s) (PTO/SB/08)~~
Paper No(s)/Mail Date *5/22/2007,6/15/2006,12/22/2006*.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. Claims 5, 10-12 are pending.

Information Disclosure Statement

2. The Information Disclosure Statement (IDS) submitted on 6/15/2006 is not in compliance with the provisions of 37 CFR 1.97.

- Foreign document JP9-36685 was not provided. It is not considered by the examiner for the purposes of examination.

The Information Disclosure Statement (IDS) submitted on 12/22/2006 is in compliance with the provisions of 37 CFR 1.97.

The Information Disclosure Statement (IDS) submitted on 5/22/2007 is in compliance with the provisions of 37 CFR 1.97.

Drawings

3. The drawings filed on 6/15/2006 are accepted by the examiner.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 5, 10-12 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claims cite components to the invention,

however the language of the claims raise the question as to whether the claims are directed to an abstract idea. Appropriate output for tangibility is needed.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being taught by Satyamurti et al. (US Patent #5920840) in view of Mandell (US Patent # 4940977).

As per claim 5, Satyamurti discloses:

- **an adaptive differential pulse code modulation circuit which modulates digital audio data by an adaptive differential pulse code modulation system**
- [Satyamurti, column 8, lines 11-13] discloses "preferably, an ***Adaptive Differential Pulse Coded Modulation coder (ADPCM) is used to encode the speech*** into data that is subsequently distributed to the transmitters." Satyamurti discloses the use of an ADPCM which teaches the instant application.
- **a high frequency component cutting unit which cuts off high frequency components existing on a high frequency band of the digital audio data before compression which are inputted to the adaptive differential pulse code modulation circuit, or the digital audio data after decompressed which are outputted from the adaptive differential pulse code modulation circuit**
- [Satyamurti, column 9, lines 61-65] discloses "An analog speech signal is input to an ***anti-aliasing low pass filter 301 which strongly attenuates all frequencies above one-half the sampling rate of an analog-to-digital converter*** (ADC) 303 which is further coupled to the filter 301." An anti-aliasing filter gets rid of high frequency components which would be input to the ADPCM.

- **changing cutoff frequency characteristics of the high frequency component cutting unit according to a compression bit rate of the adaptive differential pulse code modulation circuit**
- [Satyamurti, column 9, lines 61-65] discloses "An analog speech signal is input to an ***anti-aliasing low pass filter 301 which strongly attenuates all frequencies above one-half the sampling rate of an analog-to-digital converter*** (ADC) 303 which is further coupled to the filter 301." An anti-aliasing filter inherently changes cutoff frequency characteristics according to the bit rate because it attenuates anything above one-half of the sampling rate. The sampling rate is related to the compression bit rate.

Satyamurti fails to teach,

- **a controller which changes cutoff frequency characteristics of the high frequency component cutting unit**

Mandell, in analogous art, teaches the above limitations,

- [Mandell, column , lines] discloses "FIG. 3 shows a set of theoretical response curves for the variable-frequency filters 14 and 14', showing the low-frequency quiescent position and the high-frequency limiting position of the filter in solid lines and several examples of intermediate positions in dashed lines. ***The filter corner frequency, of course, may assume substantially an infinite number of positions in response to the DC control signal***." The filter is a low pass filter, which teaches that it cuts off high frequency components through a controller.

- Mandell and Satyamurti are analogous art because both inventions concern digital encoding. It would be obvious to someone of ordinary skill in the art at the time of the invention to combine Mandell with the Satyamurti device because it improves over the prior art due to the fact that "Many prior art adaptive delta modulators operate in the digital domain to determine the required adaptation, using various bit-counting algorithms and circuits to increase the step size when long strings of ones or zeros are encountered in the encoded digital audio bit stream. Other prior art delta-modulator adaptation-control circuits operate in the analog domain, typically employing techniques similar to those used in the control circuits of analog audio compressors and expanders, including the use of "speed-up" networks to minimize overload at the onset of transients. The control circuit of the present invention, although operating also in the analog domain, recognizes that the encoded digital bit stream carries audio information particularly well suited for adaptive control and that the audio information can be simply derived and processed as an analog signal for use as an adaptation control signal." [Mandell, column 2, lines 15-31]

Claim 10-12 rejected under 35 U.S.C. 103(a) as being taught by Satyamurti et al. (US Patent #5920840) in view of Mandell (US Patent # 4940977) and further in view of Tsuji et al. (US Patent 6385261).

As per claim 10, Satyamurti discloses:

- **an adaptive differential pulse code modulation circuit which modulates digital audio data by an adaptive differential pulse code modulation system**
- [Satyamurti, column 8, lines 11-13] discloses "preferably, an ***Adaptive Differential Pulse Coded Modulation coder (ADPCM) is used to encode the speech*** into data that is subsequently distributed to the transmitters." Satyamurti discloses the use of an ADPCM which teaches the instant application.
- **a high frequency component cutting unit which cuts off high frequency components existing on a high frequency band of the digital audio data before compression which are inputted to the adaptive differential pulse code modulation circuit**
- [Satyamurti, column 9, lines 61-65] discloses "An analog speech signal is input to an ***anti-aliasing low pass filter 301 which strongly attenuates all frequencies above one-half the sampling rate of an analog-to-digital converter*** (ADC) 303 which is further coupled to the filter 301." An anti-aliasing filter gets rid of high frequency components which would be input to the ADPCM.

Satyamurti fails to teach,

- **an amplitude detection circuit which detects an amplitude in a high frequency region of the digital audio data before compressed which are inputted to the adaptive differential pulse code modulation circuit**
- **a controller which compares the amplitude detected by the amplitude detection circuit with a threshold value, and changes the cutoff frequency characteristics of the high frequency component cutting unit on the basis of the comparison result**

Mendall, in analogous art, teaches,

- **a controller which changes cutoff frequency characteristics of the high frequency component cutting unit based on a result**
- [Mandell, column , lines] discloses “FIG. 3 shows a set of theoretical response curves for the variable-frequency filters 14 and 14', showing the low-frequency quiescent position and the high-frequency limiting position of the filter in solid lines and several examples of intermediate positions in dashed lines. ***<u>The filter corner frequency, of course, may assume substantially an infinite number of positions in response to the DC control signal</u>***.” The filter is a low pass filter, which teaches that it cuts off high frequency components through a controller.
- Mandell and Satyamurti are analogous art because both inventions concern digital encoding. It would be obvious to someone of ordinary skill in the art at the time of the invention to combine Mandell with the Satyamurti device because it improves over the prior art due to the fact that "Many prior art

adaptive delta modulators operate in the digital domain to determine the required adaptation, using various bit-counting algorithms and circuits to increase the step size when long strings of ones or zeros are encountered in the encoded digital audio bit stream. Other prior art delta-modulator adaptation-control circuits operate in the analog domain, typically employing techniques similar to those used in the control circuits of analog audio compressors and expanders, including the use of "speed-up" networks to minimize overload at the onset of transients. The control circuit of the present invention, although operating also in the analog domain, recognizes that the encoded digital bit stream carries audio information particularly well suited for adaptive control and that the audio information can be simply derived and processed as an analog signal for use as an adaptation control signal." [Mandell, column 2, lines 15-31]

Satyamurti and Mendall still fail to teach,

- **an amplitude detection circuit which detects an amplitude in a high frequency region of the digital audio data before compressed**
- **a controller which compares the amplitude detected by the amplitude detection circuit with a threshold value**

Tsuji, in analogous art, teaches the above limitation,

- **an amplitude detection circuit which detects an amplitude in a high frequency region of the digital audio data before compressed which are inputted to the adaptive differential pulse code modulation circuit**
- [Tsuji, column 3, lines 56-57] discloses "The envelope detector 16 determines the ***amplitude level of the output of the high-pass filter*** 9a." The high pass filter contains the high frequency region of the audio data.
- Tsuji and Satyamurti are analogous art because both pertain to audio signal processing. It would be obvious to combine Tsuji with the Satyamurti device because "it is accordingly an object of the present invention to detect impulse noise lasting for brief intervals of time, while avoiding the detection of signals that appear abruptly but last for longer intervals" which assists in improving signal quality by eventually filtering noise. [Tsuji, column 2, lines 1-6]
- **a controller which compares the amplitude detected by the amplitude detection circuit with a threshold value**
- [Tsuji, column 8, lines 36-50] discloses "Referring to FIG. 14, the sixth embodiment is a ***noise reduction system 28 comprising the impulse noise detector 29 of the first embodiment and an impulse noise reducer 30"*** which operates "***in response to the impulse noise detection signal output by the impulse noise detector 29***..." Tsuji teaches that there is a control signal generated by the impulse noise detection signal, which would be the controller. Furthermore, [Tsuji, column 4, lines 12-14] discloses "the first embodiment accordingly detects impulse noise by comparison with a threshold set in relation

to the background noise level." Tsuji also teaches that there is a comparison made by a threshold.

- Tsuji and Satyamurti are analogous art because both pertain to audio signal processing. It would be obvious to combine Tsuji with the Satyamurti device because "it is accordingly an object of the present invention to detect impulse noise lasting for brief intervals of time, while avoiding the detection of signals that appear abruptly but last for longer intervals" which assists in improving signal quality by eventually filtering noise. [Tsuji, column 2, lines 1-6]

As per claim 11, claim 10 is incorporated and Satyamurti fails to teach:

- **the controller changes the cutoff frequency characteristics of the high frequency component cutting unit when the amplitude detected by the amplitude detection circuit exceeds the threshold value**

Mendall, in analogous art, teaches,

- **a controller which changes cutoff frequency characteristics of the high frequency component cutting unit based on a result**
- [Mandell, column , lines] discloses "FIG. 3 shows a set of theoretical response curves for the variable-frequency filters 14 and 14', showing the low-frequency quiescent position and the high-frequency limiting position of the filter in solid lines and several examples of intermediate positions in dashed lines. ***<u>The filter corner frequency, of course, may assume substantially an infinite number of positions in response to the DC control signal</u>***." The filter is a low pass

filter, which teaches that it cuts off high frequency components through a controller.

- Mandell and Satyamurti are analogous art because both inventions concern digital encoding. It would be obvious to someone of ordinary skill in the art at the time of the invention to combine Mandell with the Satyamurti device because it improves over the prior art due to the fact that "Many prior art adaptive delta modulators operate in the digital domain to determine the required adaptation, using various bit-counting algorithms and circuits to increase the step size when long strings of ones or zeros are encountered in the encoded digital audio bit stream. Other prior art delta-modulator adaptation-control circuits operate in the analog domain, typically employing techniques similar to those used in the control circuits of analog audio compressors and expanders, including the use of "speed-up" networks to minimize overload at the onset of transients. The control circuit of the present invention, although operating also in the analog domain, recognizes that the encoded digital bit stream carries audio information particularly well suited for adaptive control and that the audio information can be simply derived and processed as an analog signal for use as an adaptation control signal." [Mandell, column 2, lines 15-31]

Satyamurti and Mendall still fail to teach,

- **a controller which compares the amplitude detected by the amplitude detection circuit with a threshold value and functions upon detection**

Tsuji, in analogous art, teaches the above limitation,

- [Tsuji, column 8, lines 36-50] discloses “Referring to FIG. 14, the sixth embodiment is a ***noise reduction system 28 comprising the impulse noise detector 29 of the first embodiment and an impulse noise reducer 30”*** which operates “***in response to the impulse noise detection signal output by the impulse noise detector 29***...” Tsuji teaches that there is a control signal generated by the impulse noise detection signal, which would be the controller. Furthermore, [Tsuji, column 4, lines 12-14] discloses "the first embodiment accordingly detects impulse noise by comparison with a threshold set in relation to the background noise level.” Tsuji also teaches that there is a comparison made by a threshold. The impulse noise detection signal (controller) generates an output signal to control the noise reduction system.
- Tsuji and Satyamurti are analogous art because both pertain to audio signal processing. It would be obvious to combine Tsuji with the Satyamurti device because "it is accordingly an object of the present invention to detect impulse noise lasting for brief intervals of time, while avoiding the detection of signals that appear abruptly but last for longer intervals” which assists in improving signal quality by eventually filtering noise. [Tsuji, column 2, lines 1-6]

As per claim 12, claim 10 is incorporated and Satyamurti fails to teach:

- **the controller changes the cutoff frequency characteristics of the high frequency component cutting unit when the amplitude detected by the amplitude detection circuit has exceeded the threshold value during a**

previously set time period, or when amplitude detected by the amplitude detection circuit has not exceeded the threshold value during a previously set time period

Mendall, in analogous art, teaches,

- **a controller which changes cutoff frequency characteristics of the high frequency component cutting unit based on a result**
- [Mandell, column , lines] discloses "FIG. 3 shows a set of theoretical response curves for the variable-frequency filters 14 and 14', showing the low-frequency quiescent position and the high-frequency limiting position of the filter in solid lines and several examples of intermediate positions in dashed lines. ***<u>The filter corner frequency, of course, may assume substantially an infinite number of positions in response to the DC control signal</u>***." The filter is a low pass filter, which teaches that it cuts off high frequency components through a controller.
- Mandell and Satyamurti are analogous art because both inventions concern digital encoding. It would be obvious to someone of ordinary skill in the art at the time of the invention to combine Mandell with the Satyamurti device because it improves over the prior art due to the fact that "Many prior art adaptive delta modulators operate in the digital domain to determine the required adaptation, using various bit-counting algorithms and circuits to increase the step size when long strings of ones or zeros are encountered in the encoded digital audio bit stream. Other prior art delta-modulator adaptation-

control circuits operate in the analog domain, typically employing techniques similar to those used in the control circuits of analog audio compressors and expanders, including the use of "speed-up" networks to minimize overload at the onset of transients. The control circuit of the present invention, although operating also in the analog domain, recognizes that the encoded digital bit stream carries audio information particularly well suited for adaptive control and that the audio information can be simply derived and processed as an analog signal for use as an adaptation control signal." [Mandell, column 2, lines 15-31]

Satyamurti and Mendall still fail to teach,

- **the amplitude detected by the amplitude detection circuit has exceeded the threshold value during a previously set time period, or when amplitude detected by the amplitude detection circuit has not exceeded the threshold value during a previously set time period**

Tsuji, in analogous art, teaches the above limitation,

- [Tsuji, column, lines] discloses "***FIG. 4 illustrates the detection of a noise impulse with a duration of 0.2 milliseconds***, when the averaging interval is two milliseconds and M is equal to four. Time is indicated on the horizontal axis. Data values are indicated on the vertical axis, normalized so that the noise impulse has a level of unity. For simplicity, the envelope data EN stored in the memory 17 are shown as having a square waveform. The background noise level LN is close to zero. ***When the comparator 22 compares the data value at the leading edge of the noise impulse (D), the average data value***

AV in the surrounding two-millisecond interval is substantially equal to 0.1, and the threshold value TH set by the multiplier 21 is substantially 0.1.times.4, or 0.4. The data value D exceeds the threshold TH (1>0.4), so the impulse noise detection signal is activated." Tsuji teaches that the amplitude values taken from the envelope detector are compared over set periods of time with a threshold and the control signal generated by the impulse noise detection is activated depending on whether the threshold is exceeded on not.

- Tsuji and Satyamurti are analogous art because both pertain to audio signal processing. It would be obvious to combine Tsuji with the Satyamurti device because "it is accordingly an object of the present invention to detect impulse noise lasting for brief intervals of time, while avoiding the detection of signals that appear abruptly but last for longer intervals" which assists in improving signal quality by eventually filtering noise. [Tsuji, column 2, lines 1-6]

Conclusion

6. Refer to PTO-892, Notice of References Cited for a listing of analogous art.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to GREG A. BORSETTI whose telephone number is (571)270-3885. The examiner can normally be reached on Monday - Thursday (8am - 5pm Eastern Time).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chameli Das can be reached on 571-272-3696. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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